

CLAIMS

[1] A communication system comprising a first communication device and a second communication device,

5 wherein said first communication device includes:

a first content receiving unit operable to receive, via a first communication path, a Multicast frame which stores a content;

a conversion unit operable to convert the received Multicast frame into a Unicast frame addressed to said second communication device; and
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a first content transmission unit operable to transmit the converted Unicast frame to said second communication device via a wireless second communication path, based on a protocol having a re-transmission processing, and

15 said second communication device includes

a second content receiving unit operable to receive the Unicast frame transmitted via said second communication path from said first communication device based on the protocol having the re-transmission processing.

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[2] The communication system according to Claim 1,

wherein the Multicast frame is an IP Multicast frame, and

said conversion unit is operable to convert the IP Multicast frame into the Unicast frame in which a MAC address of said second communication device is set as an address at a data link layer.
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[3] The communication system according to Claim 2,

wherein said conversion unit is operable to convert the IP Multicast frame to the Unicast frame in which an IP address included in the IP Multicast frame is set as an address at a network layer, and the MAC address of said second communication device is set to as the address at the data link layer.
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[4] The communication system according to Claim 2,
wherein said conversion unit is operable to convert the IP
Multicast frame to the Unicast frame in which an IP address of said
5 second communication device is set as an address at a network layer,
and the MAC address of said second communication device is set to
as the address at the data link layer.

[5] The communication system according to Claim 1,
10 wherein said second communication device further includes a
second content request unit operable to request said first
communication device to distribute the content, and

said first communication device further includes a first
content request receiving unit operable to receive the content
15 request from said second communication device,

wherein said first content receiving unit is operable to extract
from the Multicast frames transmitted via said first communication
path a Multicast frame which stores a content corresponding to the
content request received by said first content request receiving unit,
20 and operable to receive the extracted Multicast frame.

[6] The communication system according to Claim 5 further
comprising a plurality of said second communication devices,

wherein said first content request receiving unit is operable to
25 receive the content requests from the plurality of said second
communication devices,

said first content receiving unit is operable to extract from the
Multicast frames which are transmitted via said first communication
path Multicast frames corresponding to a plurality of contents
30 corresponding to the plurality of the content requests received by
said first content request receiving unit, and operable to receive the
extracted Multicast frames,

said conversion unit is operable to convert the plurality of the Multicast frames which have been received by said first content receiving unit and are corresponding to the plurality of the contents into Unicast frames which are addressed to the plurality of said second communication devices which have requested the contents, and

said first content transmission unit is operable to transmit the Unicast frames which have been converted by said conversion unit to the plurality of said second communication devices.

[7] The communication system according to Claim 6,

wherein said first communication device further includes a first content duplication unit operable to duplicate a content requested by the plurality of said second communication devices among a plurality of contents included in the Multicast frames received by said first content receiving unit,

wherein said conversion unit is operable to convert the Multicast frames corresponding to a plurality of the identical contents which have been duplicated by said first content duplication unit into Unicast frames which are addressed to the plurality of said second communication devices which have requested the content, and

said first content transmission unit is operable to transmit the Unicast frames which have been converted by said conversion unit to the plurality of said second communication devices which have requested the content.

[8] The communication system according to Claim 1 further comprising a third communication device which is connected to said second communication device,

wherein said second communication device further includes a second content transmission unit operable to transmit a content

included in the Unicast frame received by said second content receiving unit to said third communication device, and

5 said third communication device is operable to receive the content transmitted from said second communication device and to provide the received content to a user.

[9] The communication system according to Claim 8,
 wherein said second content transmission unit is operable to convert the Unicast frame received by said second content receiving
10 unit into a Multicast frame and to transmit the converted Multicast frame to said third communication device.

[10] The communication system according to Claim 8,
 wherein said second communication device further includes:
15 a second content request receiving unit operable to receive the content request from said third communication device;

 a second content request unit operable to request said first communication device to distribute a content corresponding to the content request received by said second content request receiving
20 unit, and

 said first communication device further includes a first content request receiving unit operable to receive the content request from said second communication device,

 wherein said first content receiving unit is operable to extract
25 from the Multicast frames which have been transmitted via said first communication path a Multicast frame which stores the content corresponding to the content request received by said first content request receiving unit, and operable to receive the extracted Multicast frame.

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[11] The communication system according to Claim 10 further comprising a plurality of said third communication devices,

wherein said second communication device further includes a second content duplication unit operable to duplicate the content requested by the plurality of said third communication devices among a plurality of contents included in the Multicast frames received by said second content receiving unit, and

said second content transmission unit operable to transmit a plurality of identical contents which have been duplicated by said second duplication unit to the plurality of said third communication devices which have requested the contents.

[12] The communication system according to Claim 10 further comprising a plurality of said third communication devices,

wherein said second content request unit is operable to request said first communication device to distribute the content after receiving all content requests from the plurality of said third communication devices, in a case where the contents requested by the plurality of said third communication devices are identical.

[13] The communication system according to Claim 1.

wherein said first content receiving unit is operable to receive a Multicast frame which stores a plurality of the contents,

wherein said conversion unit is operable to convert the Multicast frame corresponding to the plurality of the contents received by said first content receiving unit into a Unicast frame, in order to store the plurality of the contents into the single Unicast frame.

[14] The communication system according to Claim 1.

wherein said first communication path is a wire, and said first content receiving unit is operable to receive, via said first communication path, the Multicast frame which stores the content, based on the protocol having the re-transmission processing.

[15] A transmitting device which transmits a content to a receiving device, said transmitting device comprising:

5 a first content receiving unit operable to receive, via a first communication path, a Multicast frame which stores the content;
a conversion unit operable to convert the received Multicast frame into a Unicast frame addressed to said receiving device; and
a first content transmission unit operable to transmit the converted Unicast frame to said receiving device via a wireless
10 second communication path, based on a protocol having a re-transmission processing.

[16] A receiving device which receives a content transmitted from a transmitting device,

15 wherein the transmitting device includes:
a first content receiving unit operable to receive, via a first communication path, a Multicast frame which stores the content;
a conversion unit operable to convert the received Multicast frame into a Unicast frame addressed to said receiving device; and
20 a first content transmission unit operable to transmit the converted Unicast frame to said receiving device via a wireless second communication path, based on a protocol having a re-transmission processing,

said receiving device comprising:

25 a second content receiving unit operable to receive the Multicast frame transmitted from the transmitting device based on the protocol having the re-transmission processing; and

a second content transmission unit operable to further transmit the content included in the Unicast frame received by said
30 second content receiving unit.

[17] A communication method for transmitting a content to a

receiving device, said method comprising the steps of:

receiving, via a first communication path, a Multicast frame which stores a content;

5 converting the received Multicast frame into a Unicast frame addressed to the receiving device; and

transmitting the converted Unicast frame to the receiving device via a wireless second communication path, based on a protocol having a re-transmission processing.

10 [18] An airplane content distribution system for distributing a content to a seat in an airplane, said system comprising

a first communication device and a second communication device,

wherein said first communication device includes:

15 a first content receiving unit operable to receive, via a first communication path, a Multicast frame which stores a content;

a conversion unit operable to convert the received Multicast frame into a Unicast frame addressed to said second communication device; and

20 a first content transmission unit operable to transmit the converted Unicast frame to said second communication device via a wireless second communication path, based on a protocol having a re-transmission processing, and

said second communication device includes:

25 a second content receiving unit operable to receive the Unicast frame transmitted from said first communication device via said second communication path based on the protocol having the re-transmission processing; and

30 a second content transmission unit operable to transmit the content included in the Unicast frame received by said second content receiving unit to said seat.